

FY '91
CLINICAL
CENTER
ANNUAL
REPORT



U.S. DEPARTMENT OF
HEALTH AND HUMAN SERVICES

Public Health Service
National Institutes of Health

CLINICAL CENTER VISION STATEMENT

AS THE WORLD'S PREMIER RESEARCH HOSPITAL, THE NIH

CLINICAL CENTER STRIVES TO USE

RESOURCES EFFICIENTLY TO PROVIDE

SERVICES AND EXPERTISE THAT EXCEED

THE EXPECTATIONS OF PATIENTS, STAFF,

INVESTIGATORS, AND THE PUBLIC. THE

CLINICAL CENTER ATTRACTS THE BEST

PEOPLE, AND EMPHASIZES PERSONAL AND

PROFESSIONAL DEVELOPMENT TO SUPPORT

THE HIGHEST QUALITY CLINICAL RESEARCH

AND COMPASSIONATE PATIENT CARE.

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The Warren Grant Magnuson Clinical Center, the world's largest hospital devoted exclusively to clinical investigation, is the research hospital of the National Institutes of Health. In its beds and clinics are patients from 13 institutes*, who consent to participate in research studies (protocols) and are treated without charge. Unlike most hospitals, the Clinical Center does not offer general diagnostic and treatment services. Admission is selective: patients are chosen by institute physicians solely because they have an illness under study by those institutes. The Clinical Center employs 2,000 people and houses a total of 4,500 NIH employees, 25 percent of whom hold doctorate degrees; in addition, numerous NIH guest scientists from around the world collaborate in Clinical Center activities. The Clinical Center also offers training in research medicine for young physicians, medical students, and nursing students.

About 9,300 patients are admitted yearly to the 13-story, 450-bed hospital. Another 164,000 visits are made annually to the outpatient clinic. Five hundred healthy people are also admitted each year to serve as normal volunteers. Almost 1,000 physicians offer medical care at the Clinical Center, and more than 700 registered nurses provide care to patients.

A unique feature of the Clinical Center is the closeness of laboratories and patients, often separated only by the width of a hospital hallway. Traffic across this short distance is decidedly two-way. Advances realized in the laboratory are brought to the bedside, and new areas for laboratory investigation are suggested by the health care team's observations of patients. Built in 1953, the Clinical Center was specially designed to foster this exchange of information between basic scientists and clinicians. Indeed, many NIH clinicians are themselves outstanding scientists. Basic scientists in more than 1,200 laboratories work side by side with clinicians caring for patients. More than 2,700 research projects are in progress on the 318-acre NIH campus in Bethesda, Md., making it one of the largest research sites in the world. Worldwide over the years, NIH has supported the work of 76 Nobel Prize winners.

Clinical Center medical departments are specially equipped to serve the needs of biomedical research and patient care. Characterized by state-of-the-art technology and sophisticated

training programs for their professionals, they include the departments of transfusion medicine, pharmacy, diagnostic radiology, rehabilitation medicine, nuclear medicine, critical care medicine, and clinical pathology. As well, the Clinical Center has other departments devoted to support the nutritional, social, physical, and spiritual needs of patients.

**National Cancer Institute; National Eye Institute; National Heart, Lung, and Blood Institute; National Institute of Alcohol Abuse and Alcoholism; National Institute of Allergy and Infectious Diseases; National Institute of Arthritis and Musculoskeletal and Skin Diseases; National Institute of Child Health and Human Development; National Institute of Dental Research; National Institute of Diabetes and Digestive and Kidney Diseases; National Institute of Mental Health; National Institute of Neurological Disorders and Stroke; National Institute on Aging; and National Institute on Deafness and Other Communication Disorders.*

More than a year has passed since I began serving as acting director of the Clinical Center. I have nothing but high praise and deep appreciation for the many colleagues who have joined me in the Clinical Center's efforts to continually improve research support and patient care. We are responding to institute needs for increased communication and better budgetary predictability by strengthening our semi-annual planning meetings with each institute, working with the Division of Financial Management to revise the cost allocation from quarterly to annually, and providing institute leaders with quarterly reports of Clinical Center resource use. We have established a board of scientific counselors who will review Clinical Center service and research—developmental, collaborative, and independent.

We completed the first year of our Total Quality Management process, "Quality Together." We have developed vision and success statements, which include a goal of keeping Clinical Center budgetary growth within the growth of the aggregate intramural NIH budget. Most of the Clinical Center work force have been trained in group process and basic problem solving, and we look forward to beginning quality improvement projects throughout the hospital.

Above all, we at the Clinical Center have attempted to promote openness, and we believe that this has contributed to a renewed spirit of collegiality among the Clinical Center, the institutes, and the Office of the NIH Director. Working together on shared commitment, we will keep the Clinical Center as the world's premier research hospital.



Saul Rosen, Ph.D., M.D.
Acting Director, Clinical Center





The management staff of the hospital forms the Office of the Director, which is responsible for all aspects of hospital management. This includes ensuring the quality of patient care services, establishing budget and staffing levels for the various hospital services, and coordinating the work of the various departments.

Representing the medical staff, the Medical Board develops policies concerning medical practice at the Clinical Center, receives and acts upon reports from various committees, and coordinates the general policies of clinical departments and services. The board makes recommendations to the Clinical Center director regarding medical staff appointments, clinical privileges, and corrective actions. Based on a continual assessment of the overall quality of patient care in the hospital, the board also recommends resources needed to provide quality clinical care.

Voting members of the board include clinical directors from the institutes with intramural clinical research programs, the Clinical Center deputy director, the Clinical Center executive officer, and the Clinical Center associate director for nursing. In addition, the chief of one of the Clinical Center's physician-headed departments is appointed for a two-year term. Ex officio non-voting members include the Clinical Center director, the NIH director or designee, a representative of the NIH General Counsel, and the executive secretary of the Medical Board.

Another function of the Office of the Director is to oversee the technology transfer program. The goal of technology transfer is to ensure that discoveries made in NIH laboratories are disseminated to promote public health. It provides an opportunity for the development of new drugs, devices, and diagnostic tests to be done in partnership with private industry. This partnership represents a great potential benefit to NIH in terms of augmenting its ability to conduct laboratory and clinical research.

A major undertaking in FY '91 was the implementation of "Total Quality Management," a program based on the principles of continuous quality improvement. The Clinical Center's adaptation of the process is called "Quality Together." The Clinical Center trained more than 2,000 of its employees in the principles and applications of TQM. Each department has a vision statement, which it strives to meet through team effort. Quality improvement

plans from each department are developed to support the organization.

A steering committee, comprised of senior management staff, was established to guide the QT process. It immediately initiated a number of champion projects to get the process off the ground. One of these projects is determining constituent expectations. Through the use of surveys and focus groups, this project group aims to identify improvement opportunities. A recognition champion project has surveyed employees to determine how they would like to be recognized for their accomplishments. Another project group is determining how QT can be incorporated into performance appraisals.

Each department is in the process of completing its own customer identification and analysis from which to launch its quality improvement efforts. This year, QT focused on training. The FY '92 quality plan will outline areas for improvement projects with targeted goals. Each office under the umbrella of the Office of the Director is striving to fulfill the vision of the Clinical Center.

BIOETHICS

The bioethics program strives to provide leadership and assistance in developing, promoting, and maintaining high ethical standards for patient care and human subjects research. This mission is fulfilled through consultation and educational services aimed at Clinical Center and institute staff, patients, families, and the general public.

The bioethics program plays an important role in facilitating the review of clinical research protocols. Beginning officially in FY '91, members of the bioethics program staff serve as non-voting consultants on each of the institute clinical research subpanels. In this capacity, the bioethicists can assist in the identification and resolution of ethical issues, such as informed consent, and the research risks and benefits to human subjects.

In addition, the bioethics program offers consultation on request to investigators designing research studies involving human subjects, and to health care teams, patients, and families trying to resolve difficult problems and value conflicts.

In FY '91, the Clinical Center drafted a policy on "Do Not Resuscitate" orders. Preparations were also made to implement the Patient Self-Determination Act, a new federal law that requires hospitals, nursing homes, and other health care institutions to provide adult patients with information on their rights to make decisions regarding their medical care, including the right to accept or refuse treatment and the right to formulate advance

directives such as living wills and durable powers of attorney for health care.

As part of its strong commitment to education, the bioethics program sponsors a 13-month postdoctoral fellowship in clinical and research ethics. The fellowship offers educational opportunities including research protocol review with emphasis on protection of research subjects and informed consent, ICRS experience, clinical bioethics consultation, policy formulation and evaluation, and multidisciplinary teaching programs in bioethics.

Still in the development and acquisition phase, the John L. Decker Bioethics Resource Center is located in the bioethics program office. When fully operational, the resource center will be a collection of approximately 350 non-circulating ethics volumes, an extensive reprint database, and an audiovisual collection.

Research projects designed to increase knowledge in the areas of clinical and research ethics are conducted by staff members. In FY '91, ongoing research projects included a large scale study of the personalities, demographic characteristics, and motivations of healthy persons who volunteer themselves or their healthy children as participants in research.

BUILDING SERVICES

With an annual budget of \$4.5 million, the Office of Building Services staff oversees all construction and renovation projects. The staff checks drawings of new projects to ensure compliance with fire safety codes and standards as set forth by the Joint Commission on Accreditation of Healthcare Organizations. Approximately 1,000 work requests are reviewed each year for funds approval as well as needs verification. In FY '91, a new method of submitting requests for funding was implemented through the DELPRO system, greatly enhancing the speed with which these requests are handled.

■■■ *THE OFFICE OF BUILDING SERVICES WILL ENSURE THAT THE NIH CLINICAL CENTER OCCUPIES A PHYSICAL ENVIRONMENT FITTING ITS REPUTATION AS THE WORLD'S PREMIER RESEARCH HOSPITAL. THE DIVISION OF ENGINEERING SERVICES AND THE CLINICAL CENTER WILL ACHIEVE THIS THROUGH A COLLECTIVE COMMITMENT TO EXCELLENCE AND CONTINUOUS INTERACTION.* ■■■

Major new building programs include the completion and occupancy of the new surgery addition, the design and preconstruction phase of the patient care unit upgrades planned for FY '92, and the renovation of the 4 and 5 West, 3 West, 5 East, 8 West, 10D ICU, and the new 2 West bone marrow transplant unit. Other major projects in FY '91 were the design, planning, and implementation of the relocation of the Materials Management



Department administrative office to facilitate the major renovation of their area, and the completion of emergency repairs to the parking structure in preparation for major repairs scheduled for FY '92.

Twice a year the Office of Building Services coordinates with the Division of Engineering Services emergency power tests for the hospital. The Clinical Center is one of the few hospitals in the country that can switch to emergency power under controlled conditions to test the emergency generators.

In the spirit of Quality Together, the Office of Building Services joined forces with the Division of Engineering Services and created a CC/DES champion project committee, which will work toward resolving problems with work requests and projects within the Clinical Center.

CHILDREN'S SCHOOL

The program in the NIH Children's School has been evolving since its inception in 1954, but never as quickly as in the last few years. With new mandates issued by the federal government, local schools have made the necessary changes and adaptations. Students have arrived here with work defined by new government criteria and with new developments in education. Most apparent have been the changes in early education.

Years ago, this school did not teach kindergarten children. Parents did not expect it, and the home school teacher did not want it. More recently, a half hour of daily instruction would cover the necessary objectives. Today, it is common for the parents of kindergarten children to bring in a full briefcase of work to be completed during the patient's stay. Some parents of

preschool children now request that we spend time working with their children. At that level, they attend preschools and nursery schools dealing with early child development. Some of the objectives are of an academic nature that require a trained teacher.

The changes in early education in the NIH Children's School follow those made in the various home schools. The goal of the NIH school is to send the patient back to school with a smooth re-entry. Changes at the secondary level are expected soon. With the resources of the Montgomery County Home Instruction Services and continued cooperation of the Clinical Center administration, the Children's School will be able to adapt with ease.

CLINICAL CENTER COMMUNICATIONS

Composed of public affairs specialists and administrative support staff, the Office of Clinical Center Communications (CCC) serves both the Clinical Center employees and the public community. Within the hospital, support to other Clinical Center departments is provided through the coordination and production of hospital-wide campaigns to heighten patient, staff, and visitor awareness on topics ranging from blood donation to patient confidentiality.

■■■ *By being knowledgeable, informed, responsive to its various publics, and by maintaining the highest quality skills, CCC strives to inform patients, the scientific community, and the general public of intramural clinical research programs at NIH; and supports CC departments in their public relations and communications needs.* ■■■

Services to Clinical Center departments also include manuscript and protocol editing. Approximately 100 are edited every year. CCC also plays a vital role in physician and employee recruitment. Efforts were implemented to recruit personnel for the Department of Transfusion Medicine and the Department of Clinical Pathology.

As a service to the community, CCC also provides a patient referral program. Physicians around the world who want to refer patients to NIH call or send the patient's medical history to CCC. In addition, patients, their family members, and their friends also call CCC to inquire of the latest protocols and for an explanation of the referral procedure. More than 600 written referrals and 2,000 telephone inquiries or referrals pass through the office every year.

The staff handled more than 100 press calls from local, national, and international reporters inquiring about a variety of topics, including the Clinical Center, research studies, the normal volunteer program, and the Children's Inn. Stories appeared in *The Washington Post* and *The New York Times*, and on "ABC News."

Employees continued to enjoy the Clinical Center newsletter, *CC News*, which is circulated to all Clinical Center employees. CCC also produced numerous patient education publications for Clinical Center departments that covered a range of specific therapies and procedures, as well as guidelines for the use of such Clinical Center services as patient activities.

The popular "Medicine for the Public" lecture series, now in its 15th season, drew standing-room-only crowds. Experts discussed such topics as gene therapy, bone marrow transplantation, food allergy, and hyperactivity. CCC created original and informative booklets and videotapes, which were distributed throughout the country, based on the annual lecture series. "Medicine for the Public" booklets produced in FY '91 include *Allergic Diseases* and *Drugs and the Brain*; videotapes include *Coping with the Changing Seasons* and *Understanding Seizure Disorders*. Copy requests for some booklets have reached 1,000 per month. A syndicated column, "To Your Health," also is based on the popular series and enables CCC to reach millions of people who would benefit from information on the latest research at NIH, but who live too far away to attend the lecture series.

CCC continued to win awards in the National Association of Government Communicators annual Blue Pencil Competition and Gold Screen Competition. Judges awarded one second place award and four honorable mentions to CCC. Thousands of entries are submitted from federal, state, and local government agencies across the country. CCC also received an international award in the 5th Medicine and Scientific Film-Festival, Medikinale International Parma, one of the largest medical film events in the world.

In FY '91, the Special Events Section (SES) administered the NIH Visitors Program wherein valuable biomedical information was exchanged. An increased number of high-level local and foreign government representatives, medical professionals, and students met with Clinical Center and NIH administrators, scientists, and clinicians to exchange scientific and health information. SES staff organized the NIH lecture series, including the annual G. Burroughs Mider Lecture and the R.E. Dyer Lecture. In addition, the staff handles biweekly orientations and tours for new employees, in cooperation with the educational services office.

CCC played an instrumental role in the implementation of Quality Together. The staff developed the QT logo, slogan, and publicity campaign, including a column for *CC News*, vision statement posters, tabletents, and specialty items.

EQUAL OPPORTUNITY

The Office of Equal Opportunity provides advice and training to Clinical Center management on all equal employment opportunities and affirmative action matters. The office also provides assistance and information to employees who feel they have been discriminated against based on age, color, handicap, national origin, race, religion, sex, or veteran's preference.

Additionally, the office conducts numerous outreach activities designed to ensure diversity in the applicant pool for Clinical Center employment vacancies.

■■■ *THE OFFICE OF EQUAL OPPORTUNITY STRIVES TO MAINTAIN A PRO-ACTIVE EQUAL EMPLOYMENT OPPORTUNITY (EEO) AND AFFIRMATIVE ACTION (AA) POSTURE TO PROVIDE CLINICAL CENTER MANAGEMENT WITH CURRENT AA/EEO INFORMATION TO ASSIST MANAGEMENT SUPPORT OF ALL AA/EEO PLANS, PROGRAMS, AND INITIATIVES. THE OFFICE OF EQUAL OPPORTUNITY CONTINUES TO PROVIDE QUALITY TRAINING AND GUIDANCE TO MANAGEMENT AND SUPPORT STAFF ON ALL AA/EEO ISSUES AFFECTING THE CLINICAL CENTER. FURTHER, THE OFFICE OF EQUAL OPPORTUNITY PROVIDES COUNSELING FOR AGGRIEVED EMPLOYEES WHO FEEL THEY MAY HAVE BEEN DISCRIMINATED AGAINST BASED ON AGE, COLOR, DISABILITY, NATIONAL ORIGIN, RACE, RELIGION, SEX, OR VETERAN'S STATUS.* ■■■

FY '91 proved challenging and exciting for the Clinical Center Office of Equal Opportunity. New, innovative programs and projects gained attention throughout the United States. In FY '91, the office produced several public service announcements highlighting employment opportunities at the Clinical Center. The EEO staff also initiated a minority, disabled, Hispanic, and veteran career skills bank to assist with Federal Employment Opportunity Recruitment Program recruitment efforts. Presentations were made to more than 350 minority college students in support of FEORP.

HOSPITAL ADMINISTRATIVE OFFICERS

HAOs provide vital representation on a number of Clinical Center committees, including safety, pediatric care, standardization, equipment management, administrative policy, and patient care unit upgrades. They also participate in the advisory group planning for a new hospital facility. The HAO participation on these committees assures that the views of management and caregivers are presented.

■■■ *THE HOSPITAL ADMINISTRATIVE OFFICERS PROVIDE ADMINISTRATIVE SUPPORT TO THE PATIENT CARE UNITS AND SPECIAL PROCEDURE AREAS WITHIN THE CLINICAL CENTER. THEY FORMULATE, IMPLEMENT, AND EXECUTE A PROGRAM BUDGET THAT TOTALED CLOSE TO \$1.7 MILLION IN FY '91.* ■■■

As principal Clinical Center representatives for projects involving space utilization and patient care unit design, the HAOs participated in designing upgrades on NINDS, NIDDK, NCI, NIAMS, and NIAID patient care units in FY '91. Other areas where renovation projects were completed during the year included 10D, 5 West, and 4 West. Currently under renovation are the 2 West bone marrow transplant unit and special dietary kitchen, 5 East, 8 West, and 3 West. The staff also initiated the procurement, installation, and in-service of a new monitoring system for 10D and 7E with portable in-house units.

HAOs were involved in several Clinical Center-wide activities, including the combined federal campaign, Friends of the Clinical Center, disaster management assistance team, and the 40th anniversary of the Clinical Center.

HOSPITAL EPIDEMIOLOGY

The Hospital Epidemiology Service monitors the occurrence of nosocomial (hospital-acquired) infections, investigates clusters or outbreaks of such infections, and devises policies and procedures to prevent them. The service also educates staff and patients regarding prevention of nosocomial infections and conducts research into the epidemiology, pathogenesis, and prevention of infections. During FY '91, HES staff members kept busy responding to patient and staff concerns about the possible transmission of human immunodeficiency virus (HIV), hepatitis viruses, tuberculosis, chickenpox, and other infectious diseases.

■■■ *THE HOSPITAL EPIDEMIOLOGY SERVICE AND QUALITY ASSURANCE SERVICE PROVIDE EXEMPLARY SERVICES AND EXPERTISE TO THE INSTITUTE AND CLINICAL CENTER EMPLOYEES, TO PATIENTS, THEIR FAMILIES, VISITORS, AND TO THE HEALTH CARE COMMUNITY TO PROMOTE THE HIGHEST QUALITY OF PATIENT CARE AND CLINICAL RESEARCH. HES AND QAS PROVIDE EXCELLENCE IN EDUCATION, CONSULTATION, PATIENT CARE ASSESSMENT, EPIDEMIOLOGIC INVESTIGATION, AND SCIENTIFIC RESEARCH. HES AND QAS ATTRACT AND RETAIN PERSONNEL OF THE HIGHEST QUALITY AND NURTURE THEIR PROFESSIONAL DEVELOPMENT.* ■■■

The HES staff conducts numerous educational sessions, both formally and informally, for virtually every Clinical Center department and many institute programs. Education in Universal Precautions, designed to minimize the potential for the nosocomial transmission of HIV, hepatitis B, and other blood-borne infections, remains the cornerstone of educational efforts. Research into the epidemiology of nosocomial/occupational exposure of employees to HIV continues, and HES has documented significant decreases in exposures to blood and body fluids among Clinical Center staff since the implementation of Universal Precautions.

HES is involved in numerous collaborative employee vaccination programs designed to minimize the opportunities for disease transmission in the Clinical Center. In FY '91 both the hepatitis B vaccination and influenza vaccination programs enrolled significantly more participants compared to prior years. The employee measles immunization program was also enhanced by implementing screening for measles antibody to identify employees who need vaccination.

HES also conducts a computer-assisted daily review of antibiotics prescribed by physicians in the Clinical Center, to help ensure that antibiotics are used appropriately to prevent and treat infections.

During FY '91, HES and its sister service, the Quality Assurance Service, jointly embraced the Clinical Center "Quality Together" process and developed a joint vision statement.

The HES Quality Together success statements focus on identifying customers' needs and expectations in educational and consultative services and epidemiologic investigations, as well as establishing research and professional development goals.

HOSPITAL SAFETY

The hospital safety program strives to reduce further the risk of environmental hazards among patients, staff, and visitors. In FY '91, many of the program's successful accomplishments resulted from hazard surveillance activities conducted in the hospital, such as instituting crime prevention measures, reviewing precautions for working with hazardous materials, assessing the fire protection systems and staff training, and overseeing the management of clinical equipment.

In FY '91, the program succeeded one step further to significantly improve hazard surveillance by defining and monitoring predetermined indicators of quality for the four plant technology and safety management standards. Successful outcomes resulting from this approach included modification of the preventive maintenance schedule to ensure that all fire alarms and circuits are operative, identification of adverse trends associated with the use of clinical equipment, and revitalization of the fire and occupational safety educational programs. The clinical care instrumentation section also completed its transition to a new in-house equipment management computer system that enables the Clinical Center to maintain a current inventory of 4,000 pieces of clinical equipment. The system is also used to detect trends in electrical safety and functional performance failures.

Environmental protection is another important component of the program. The Clinical Center continues to consider the cost of hazardous waste disposal in the purchasing process for medical supplies. Substitution with less hazardous materials is preferred whenever possible. For example, to minimize the risk of accidental spills and subsequent exposures to elemental mercury, the Clinical Center substituted mechanical rather than mercury-filled thermometers for use in non-critical refrigerators and freezers. Clinical Center employees overwhelmingly endorsed the safety committee's recycling initiatives. Currently, many departments voluntarily recycle paper, aluminum cans, and packaging materials.

Clinical Center staff continued to hone their skills on emergency preparedness when the safety committee critiqued the hospital's response to two facility disasters. In January 1991, a fire destroyed a laboratory in Building 10. Two factors contributed to the cause of the fire. First, the design of the heat-generating equipment lacked thermal shut-off safety features. Second, staff placed combustible supplies near the heater and left the equipment on when they left for the day. Fortunately, there were no fire-related injuries or patient evacuations. Based on the investigation, precautions were instituted to prevent a reoccurrence. The most important outcome of this disaster was a joint effort by fire prevention, engineering, and the Clinical Center to institute a written policy for interim fire safety measures that will increase staff training and fire safety vigilance until the complex is completely sprinklered. The second disaster required that the Clinical Center modify patient care in order to accommodate PEPCO's demands during a brown-out of the normal electrical power. Once again, team work and qualified staff prevented an adverse incident to patients and staff during the emergency.

MANAGEMENT SUPPORT SERVICES

Six Quality Together teams have been established in the Office of Management Support Services to address professional environment, morale, information exchange, communication, and recognition.

The personnel office processed more than 14,000 personnel actions in FY '91. Through the award process, the office processed quality step increases and employee performance management system bonus payments totalling nearly \$1.1 million. The overall workload increased due to numerous equal employment opportunity complaints, establishing senior executive service positions, reorganizing several departments, upgrading many positions, and coping with staff shortages. Despite the large volume of activity, the personnel staff was able to keep abreast of regulatory requirements and meet the challenging expectations of its client population.

■■■ THE OFFICE OF MANAGEMENT SUPPORT SERVICES CONTINUALLY STRIVES TO DELIVER EXCEPTIONAL PRODUCTS AND SERVICES IN HUMAN RESOURCE MANAGEMENT, FINANCIAL MANAGEMENT, AND EMPLOYEE DEVELOPMENT. A DEDICATED STAFF SEEKS TO INCORPORATE RESOURCEFULNESS, CREATIVITY, RESPONSIVENESS, AND ENTHUSIASM INTO ALL ASPECTS OF ITS WORK. IN THIS PURSUIT, THE STAFF DEVELOPS EFFECTIVE SYSTEMS AND APPROACHES THAT ANTICIPATE AND MEET THE DEMANDS OF A HIGHLY INNOVATIVE RESEARCH HOSPITAL. ■■■

Efforts continued to evaluate and expand the use of Title 38 authorities as well as maintain the competitive position in the Washington-area hospital labor market through the use of 15 special pay rates for nurses and allied health specialists. Several long-standing Title 38 payroll difficulties related to shift differentials were resolved and consequently many allied health specialists received retroactive payments. Analyses on the use of Title 38 premium pay were developed for Clinical Center managers, and workshops were presented to timekeepers on Title 38 premium pay issues.

Several programs were initiated or enhanced by the educational services office during FY '91. A supervisory discussion program was started, which serves as a forum for supervisors to discuss current issues. Attendance at these forums was much higher than expected, which confirmed the need for this program. The orientation for new employees was enhanced through the development of updated audiovisuals used in the orientation. A database was set up to track usage of the death and dying videotapes, which have been borrowed 113 times in four years. There were 564 new employees oriented and 3,107 training forms processed.

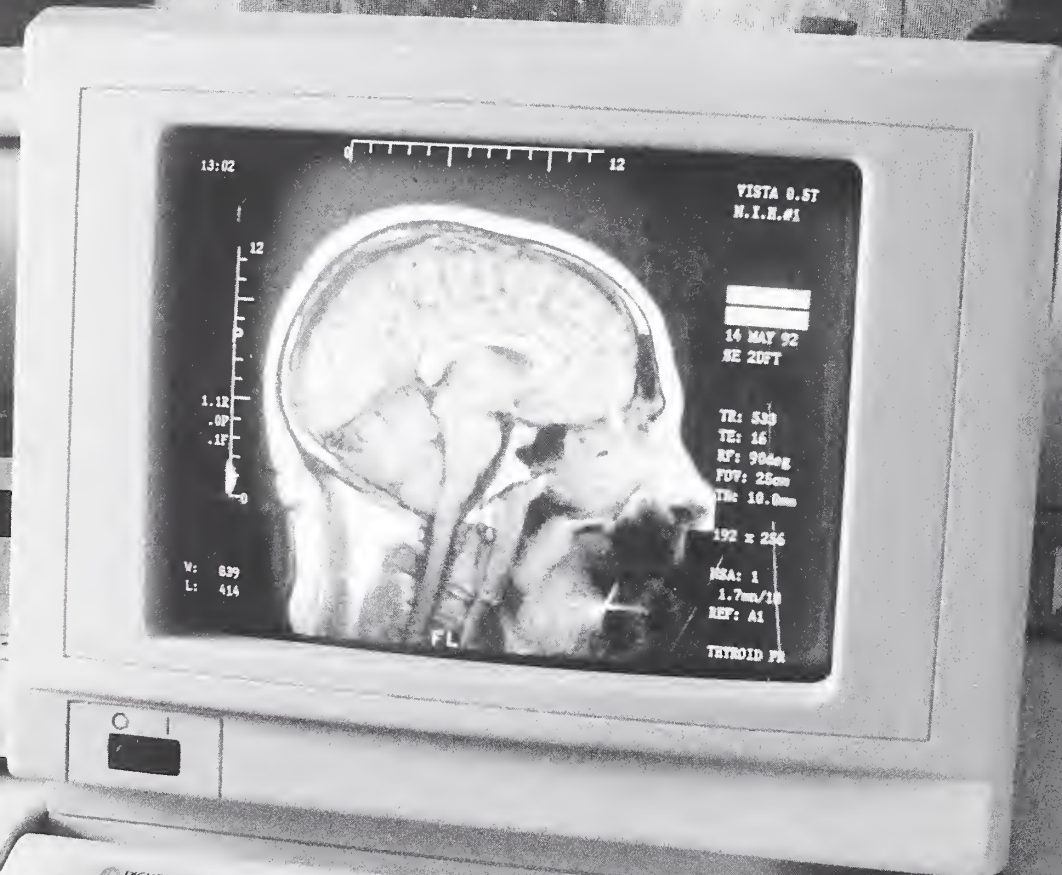
FY '91 was a successful year for the budget office, as well. Through sound financial management practices and lowered demand for services, \$6 million was returned to NIH. The expenditures for the year were consequently \$182 million. Efforts continued to provide improved analysis of cost forecasts based on the meetings with clinical and scientific directors of the institutes, centers, and divisions of NIH. In addition, retrospective and prospective protocol analysis for resource intensity became a reality and also led to improved resource allocation.

MEDICAL BOARD SERVICES

The Office of Medical Board Services provides staff assistance to the Medical Board, the organization that develops and recommends policies governing standards of care at the Clinical Center. The office sets the agenda for meetings and serves as the executive secretariat for the board, maintaining the files and carrying out board decisions as necessary.

The office also assists the Clinical Center's director by maintaining the administrative and medical-administrative policies that govern the provision and assurance of high-quality patient care. Policies issued in FY '91 covered such diverse subjects as the use of authorized patient care areas, licensure of anatomic pathology residents, correction of the medical record, and the philosophy and rationale of withholding orders to attempt cardiac resuscitation.

In FY '91, the office assumed the duties associated with requesting approval for Clinical Center employees to engage in outside activities. A manual was developed to assist the employees in preparing their requests.



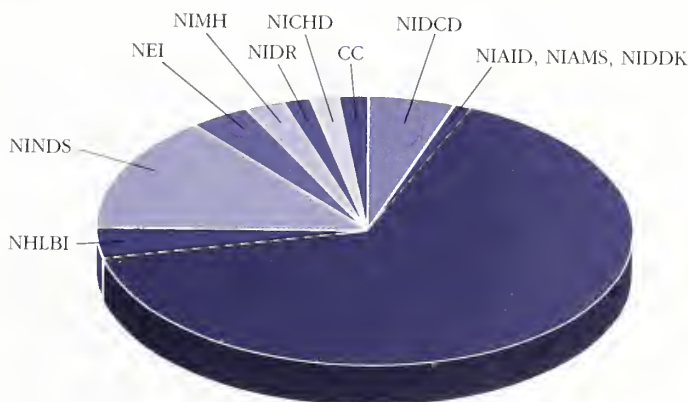
ANESTHESIA

The anesthesia section—an in-house division of the department of anesthesia at Georgetown University—provides anesthesia support and clinical care for Clinical Center patients. The staff also provides medical consultations in the areas of pain therapy, critical care, and resuscitation; offers professional support to various institutes in investigational programs; participates in teaching anesthesia and advanced cardiac life support to postgraduate physicians; and initiates primary clinical investigations.

In FY '91, anesthesia and supportive services were provided in 1,792 instances, including 73 emergencies. The recovery room staff cared for 1,395 patients, including 223 outpatients.

Anesthesia is primarily provided for procedures involving surgical and medical oncology, neurosurgery, otolaryngology, ophthalmology, gynecology, dentistry, gastroenterology, and cardiology. Anesthesia is also provided for special procedures requiring intra-operative radiation therapy and/or phototherapy, stereotactic neurosurgical procedures, CT scanning, PET scanning, and the blood barrier distribution protocol. Postoperative epidural analgesia is provided for patients requiring postoperative pain control. The chart below displays the activity by operating institute for FY '91.

■■■ *THE NIH CLINICAL CENTER OPERATING ROOM STAFF WILL PROVIDE THE HIGHEST QUALITY SERVICE THAT EXCEEDS THE EXPECTATIONS OF PATIENTS AND STAFF. THE ANESTHESIA SECTION WILL ACHIEVE AND SUSTAIN A POSITIVE ENVIRONMENT THROUGH TEAMWORK, EFFECTIVE COMMUNICATION, PROFESSIONAL DEVELOPMENT, AND EFFICIENT RESOURCE MANAGEMENT.* ■■■



Quality Together projects already initiated include a revision of the anesthesia section's quality assurance plan to place more emphasis on quality improvement and the establishment of a Hickman clinic in conjunction with the cancer day hospital. At this weekly clinic, outpatients awaiting surgery for Hickman catheter placement receive preoperative teaching, have laboratory work and x-rays completed, and see the surgeon anesthesiologist in one visit.

Georgetown anesthesia residents rotate through the Clinical Center periodically throughout the year. Residents receive training in thoracic, endocrine, neuro- , and general surgery. One resident rotates through the medical intensive care unit. During this rotation, the resident cares for critically ill medical and post-surgical patients. The resident obtains experience in invasive monitoring, respiratory care, and clinical research studies.

An advanced cardiac life support course, sanctioned by a local chapter of the American Heart Association and accredited for 16 CME credits, has been offered by the anesthesia section since 1980. In FY '91, three courses were presented and 42 ACLS providers certified. In addition, courses in basic cardiac life support also were conducted in conjunction with occupational medical service.

■ ■ ■ *THE OPERATING ROOM STAFF WILL PROVIDE THE HIGHEST QUALITY SERVICE THAT EXCEEDS THE EXPECTATIONS OF PATIENTS AND STAFF. THE ANESTHESIA SECTION WILL ACHIEVE AND SUSTAIN A POSITIVE ENVIRONMENT THROUGH TEAMWORK, EFFECTIVE COMMUNICATION, PROFESSIONAL DEVELOPMENT, AND EFFICIENT RESOURCE MANAGEMENT.* ■ ■ ■

In FY '91, in-service training included universal precautions; fire, electrical, and radiation safety; and transfusion reactions.

Six medical students participated in the anesthesia fourth-year clerkship last year. During the four-week elective period, the students received didactic teaching and hands-on experience in the operating room. Faculty presented a comprehensive schedule of topics on anesthesia to the students. Each student worked with a faculty member and was given various preoperative, intraoperative, and postoperative assignments during the course of the case management. An oral examination was given at the completion of the rotation.

CLINICAL PATHOLOGY

The Clinical Pathology Department is comprised of five services: clinical chemistry, hematology, immunology, microbiology, and phlebotomy. All members of the department were trained in Total Quality Management by eight members who received specialized training. The department established five guidance teams to identify, prioritize, and work on TQM projects for each CPD service.

Clinical Chemistry

The clinical chemistry service made considerable progress in expanding the menu of tests performed in-house, thereby reducing the cost of outside contracted testing. Tests brought in-house during FY '91 include luteinizing hormone, follicle stimulating hormone, beta-2-microglobulin, and alpha fetoprotein. Several new automated immunoassay systems were evaluated during the year in order to select one or more that would enhance the efficiency, timeliness, breadth, and economy of the service.

Research and development activities spanned in several areas, including: (1) studies of various methodologies, including those for measuring lactate, cholesterol, alkaline phosphatase isoenzymes, HDL cholesterol, free thyroxine, triiodothyroxine, ionized calcium, amylase, lipase, triglycerides, and theophylline; (2) a study of the use of cerebrospinal fluid albumin and immunoglobulin G for assessing the blood-brain barrier during steroid administration; (3) oligoclonal bands in the post-polio syndrome, multiple sclerosis, and other neurological diseases; and (4) use of receiver operating characteristic curves to assess the clinical accuracy of diagnostic procedures.

■■■ THE STAFF OF THE CLINICAL PATHOLOGY DEPARTMENT, A TEAM OF MEDICAL PROFESSIONALS AT THE WARREN G. MAGNUSON CLINICAL CENTER, WILL PROVIDE LABORATORY INFORMATION THAT MEETS OR EXCEEDS THE NEEDS OF THE PATIENTS AND PATIENT CARE PERSONNEL. THE DEPARTMENT IS COMMITTED TO THE FOLLOWING GOALS: QUALITY AND COMPASSION IN SPECIMEN COLLECTION; ACCURATE, TIMELY, AND COST-EFFECTIVE TEST RESULTS; THE HIGHEST PROFESSIONAL STANDARDS; STATE-OF-THE-ART TECHNOLOGIES; AN ACTIVE RESEARCH AND DEVELOPMENT PROGRAM; PERSONAL AND PROFESSIONAL GROWTH; RECOGNITION OF INDIVIDUAL AND GROUP ACHIEVEMENTS; ENVIRONMENTAL RESPONSIBILITY. ■■■



During the past year, the thrombosis unit of the hematology service assumed a full range of activities. The initial focus was to develop a variety of assays to quantitate specific protein deficiencies or defects that predispose to thrombosis. In addition, assays of specific activator peptides or products released in the course of platelet or coagulation activation were also implemented. Approximately 17 new tests have been implemented for the thrombosis laboratory. Clinically, the thrombosis laboratory offers a non-invasive diagnostic screening (impedance plethysmography) for deep venous thrombosis in Clinical Center patients.

The hematology service has continued its investigation into multiple areas of vascular biology and pathology. Studies include the constitutive release of von Willebrand factor from differentiated endothelial cells, and the comparison of the stimulated release of von Willebrand factor from endothelial cells grown on gelatin to Matrigel®. The initial observations suggest that the more physiologic way to study endothelial cell function is not in single cell monolayers, but in a differentiated (microcapillary) system. Further studies have indicated that factor IXa at relatively high concentrations can directly activate factor VIII. Research into the interaction of heparin with platelets also continues, and this study has been expanded to include the mechanism(s) of immunologically mediated thrombocytopenia and thrombosis associated with the administration of heparin or similar compounds.

Aspirin is known to be an effective inhibitor of platelet activation. Platelets that have been exposed to aspirin *in vivo* or *in vitro* inhibit the platelet release reaction and the second wave of platelet aggregation. CPD has shown with flow cytometry that in the presence of adenosine diphosphate, aspirin does not inhibit alpha granule release. This is significant since the alpha granule secretion releases a variety of adhesive proteins, including von Willebrand factor, fibrinogen, thrombospondin, and fibronectin. The amounts of these proteins bound to the platelet surface are similar in aspirinated platelets and normal platelets. Further studies to identify the mechanism of this ADP-induced release from these aspirinated platelets reveal that both the protein kinase C and myosin light chain kinases are involved in the alpha granule release. Studies with natural inhibitors to these two enzymes have identified the necessity of blocking both pathways to totally inhibit alpha granule release.

Immunology

The immunology service has continued to offer new assays in order to expand diagnostic capabilities in immunology at the Clinical Center. Over the past year, testing for measles antibody,

EBV serology, and IgG subclasses were evaluated and added for patient service. There also has been an expansion in the flow-cytometric immunophenotyping program to support clinical research protocols and individual patient evaluation. These methods now include three-color assays to address important, specific needs that arose in certain study situations. This is an example of the immunology service's long-term commitment to offer the highest quality in immunologic testing that is not only readily available, but also "state-of-the-art" in order to maximally support patient care in the Clinical Center.

Microbiology

The microbiology service initiated a virology laboratory that can now detect more than 10 specific viral pathogens, including cytomegalovirus and a variety of respiratory viruses. The technology employed in this new laboratory uses a variety of the most rapid viral detection methods available, including the shell vial culture technique and enzyme- and fluorescence-based procedures. Studies are also underway to optimize the detection procedures for several other viruses. By bringing these viral diagnostic procedures in-house and by using the most rapid technologies available, the department has been able to decrease both the cost per test and the time required for patient-care physicians to receive critical diagnostic information.

Progress was made in several other areas. Two additional non-radiometric DNA probes for mycobacterial identification, and one such probe for the identification of a pathogenic mold, have been incorporated into the routinely used methodology of the service. The use of polymerase chain-reaction technology for earlier identification of mycobacteria is being explored, and collaborative work is underway on the use of this technique for the detection of *Pneumocystis carinii* in patient specimens as well. Research continues on methods for the detection of microsporidia in stool specimens using light microscope techniques; the ability to use the light microscope rather than the electron microscope would greatly facilitate diagnosing infections caused by these organisms. An assessment of a fully automated system for the rapid detection of positive blood cultures has begun; if the system proves satisfactory, it may allow at least as rapid detection of positive blood cultures as can be accomplished at present, with a significant saving in technologist time. The daily microbiology service rounds, which have proved most useful for the rapid communication of laboratory results to the NIH infectious disease consultants, continue as a permanent feature of ongoing efforts to maximize the department's usefulness to all its customers.

The phlebotomy service increased by two FTEs to meet the increasing demand for phlebotomy. The outpatient phlebotomy procedures increased by 30 percent during the last five years, and the phlebotomy service added one hour of service in the morning to accommodate the increased workload.

The phlebotomy service developed a training course and wrote a manual for new and advanced phlebotomy students. The students are trained and then return to their institutes with newly acquired phlebotomy skills and self confidence that enhances patient encounters.

CRITICAL CARE MEDICINE

The Critical Care Medicine Department has three primary roles: to provide medical intensive care for critically ill patients; to provide respiratory therapy and hemodynamic monitoring services for any Clinical Center patient; and to perform basic and clinical research that will improve the treatment of critically ill patients. The department's primary function is to provide the finest, most up-to-date care for seriously ill patients.

■■■ *THE CRITICAL CARE MEDICINE DEPARTMENT WILL STRIVE TO PROVIDE THE BEST POSSIBLE CLINICAL CARE, TRAINING, AND RESEARCH IN THE FIELD OF CRITICAL CARE. CCMD WILL SELECT AND RETAIN SKILLED, HIGHLY MOTIVATED EMPLOYEES WHO CAN PROVIDE NATIONAL LEADERSHIP IN IMPROVING THE CLINICAL AND TECHNICAL SERVICES WHILE PROVIDING EXCELLENT, COST-EFFECTIVE SERVICES IN THE CLINICAL CENTER THAT MEET ALL THE NEEDS AND EXCEED THE EXPECTATIONS OF THE CLINICAL CENTER HEALTH CARE COMMUNITY, PATIENTS, AND FAMILIES.* ■■■

Frequently Clinical Center patients have serious, life-threatening problems that require the special skills of critical care physicians and specially trained nurses and technical personnel. During FY '91, CCMD admitted 382 seriously ill adult and pediatric patients for 1,485 days of intensive care. An additional 1,235 patients were admitted for short-term stays for such clinically indicated and protocol-required invasive procedures as bronchoscopy, aerosol, sputum induction, and central line placement. The majority of the CCMD patients continued to be admitted from the National Cancer Institute (69 percent) and the National Institute of Allergy and Infectious Diseases (13 percent), although every institute used CCMD services at some time during the year.

The primary responsibility and focus of CCMD is patient care. Many therapeutic regimens in the National Cancer Institute, National Institute of Allergy and Infectious Diseases, National Heart, Lung, and Blood Institute, and other institutes require the ability to support adult and pediatric patients through critical illnesses that include difficult management problems induced by

chemotherapy, radiation, or surgery. The number of patient admissions increased by 26 percent since FY '90. The amount of respiratory therapy and hemodynamic monitoring provided increased approximately five percent over FY '90. Several institutes increasingly are studying patients with more advanced and life-threatening problems than they did in past years. Important trends to recognize are increases in the need for central versus line placement and increased need for pediatric services.

Critical care medicine is recognized as an official subspecialty by internal medicine, surgery, anesthesiology, and pediatrics. CCMD has trained four fellows each year since 1982 and fellowship graduates currently occupy leadership positions in academic institutions across the country.

The department's research is collaborative with the institutes and focuses on septic shock, diffuse pneumonias, the effects of endotoxins, AIDS, and respiratory mucous production. The sophisticated facilities of the department make possible important studies that are difficult to perform at other institutions. These results are published regularly in high quality peer review journals and have brought the department national and international recognition.

The department has formed several teams to work on Quality Together projects addressing a comprehensive team approach, administrative processes, respiratory therapy services, and a patient family waiting room. The CCMD quality assurance plan also has been revised to emphasize continuous quality improvement through Total Quality Management processes.

DIAGNOSTIC RADIOLOGY

The Diagnostic Radiology Department performs all diagnostic radiological examinations required for Clinical Center patients. The department consists of various diagnostic sections, including general radiography, fluoroscopy, linear and multiplane tomography (body-section x-rays), computerized tomography, magnetic resonance imaging, special procedures, and ultrasound. Each section provides specialized services to the clinical activities of the Clinical Center. The radiology department works with institute clinicians in the design of research projects that require radiological collaboration; it also originates research designed to improve medical imaging techniques and to minimize radiation dosage to patients.

The Diagnostic Radiology Department's vision statement focuses on improving services and efficiency of operations. The statement reflects a commitment both to outstanding clinical service to the patient and research support to the institutes' scientists. It emphasizes the importance of providing education and professional growth for the staff within this environment.

As a pilot project, the department looked at film retrieval and report availability, a problem in most large radiology departments. Outstanding diagnoses or interventional feats are compromised when films are not available or accomplishments are not reported in a timely fashion to the clinicians. A project team representing all involved sections analyzed the problem, identified solutions, and implemented changes. An atmosphere has been created for optimizing all functions of the Diagnostic Radiology Department, and new projects identified by the guidance committee are being undertaken.

■ ■ ■ *THE DIAGNOSTIC RADIOLOGY DEPARTMENT WILL STRIVE TO PROVIDE THE HIGHEST QUALITY DIAGNOSTIC IMAGING AND ARCHIVING SERVICES FOR CLINICAL CARE AND RESEARCH PERFORMED BY AN EXPERIENCED STAFF IN A SAFE AND COMPASSIONATE ATMOSPHERE. THE DEPARTMENT WILL FOSTER A WORKING ENVIRONMENT THAT NURTURES EACH INDIVIDUAL'S TALENTS, AS WELL AS THEIR EDUCATIONAL AND CAREER INTERESTS.* ■ ■ ■

In addition to quality management, several major acquisitions of equipment have enabled the department to improve diagnostic studies. The new angiographic suite will enable staff to perform electronic as well as conventional film recordings. It will increase the staff's ability to perform the most demanding interventional procedures. The availability of a second angiographic room will also allow staff members to undertake and monitor long-term thrombolytic therapy in patients with failed venous access lines, a major problem in a cancer treatment setting such as DRD.

The installation of an ultrafast CT scanner now provides non-breath-holding imaging of the most uncooperative infants and children and of the sickest adults. With conventional scanners, each acquisition requires more than a second; the Imatron Scanner acquires images of comparable quality in 100 milliseconds, thereby freezing motion and providing diagnostic studies in the most uncooperative patients. The new angiographic and ultrafast CT installations enable DRD to provide a full range of diagnostic and therapeutic services to Clinical Center patients.

The staff has continued to be published both as independent clinical investigators and as collaborators with institute physicians. Outstanding contributions include the continuation of applying sophisticated MR techniques to evaluate blood flow in capillary beds and perfusion of tissues. These accomplishments have opened new avenues for evaluating physiologic as well as pathologic conditions in clinical studies and is widely acknowledged as holding great promise.

Nuclear medicine involves the use of radioisotopes injected in small, safe doses for non-invasively diagnosing illness by scanning the flow of these isotopes through the body with external cameras sensitive to radioactivity; and the use of selected isotopes for the therapy of various diseases. The Nuclear Medicine Department continues to provide a broad scope of diagnostic scintigraphy and therapeutic services for Clinical Center patients and collaborative research efforts with institutes to develop new biomedical knowledge through the safe application of radionuclides.



The Positron Emission Tomography Department supports basic and clinical research. PET studies are performed in collaboration with other institutes. There are extensive resources available, including two medical cyclotrons, several hot cells and laboratories for radiochemistry, three PET tomographs (two brain units and a whole body instrument), and computer hardware and software for the generation and analysis of physiological images.

These two separate departments utilize radiolabeled compounds to trace physiologic processes and to diagnose disease and therefore share resources and collaborate in solving common problems.

■■■ *THE NUCLEAR MEDICINE DEPARTMENT WILL STRIVE FOR LEADERSHIP IN ITS FIELD BY EFFICIENTLY PROVIDING SERVICES THAT EXCEED THE EXPECTATIONS OF CLINICAL CENTER PATIENTS AND NIH STAFF AND BY CONDUCTING RESEARCH RECOGNIZED WORLDWIDE FOR ITS SCIENTIFIC EXCELLENCE AND INNOVATION. THESE GOALS WILL BE ACHIEVED BY PROVIDING A WORK ENVIRONMENT THAT NURTURES THE PROFESSIONAL GROWTH OF ITS EMPLOYEES. THE POSITRON EMISSION TOMOGRAPHY DEPARTMENT WILL STRIVE TO BE A WORLD LEADER IN THE AREA OF PET RADIOPHARMACEUTICAL, RADIOPHARMACY, IMAGING PHYSICS, MODELING, AND DATA ANALYSIS SCIENCES. THE GOAL WILL BE ACHIEVED BY UTILIZING RESOURCES EFFICIENTLY AND ENCOURAGING MAXIMAL INVOLVEMENT AND PROFESSIONAL DEVELOPMENT, AND BY EXCEEDING THE EXPECTATIONS OF THE INVESTIGATORS, PATIENTS, STAFF, AND PUBLIC.* ■■■

The cyclotron/radiochemistry group of the PET Department is responsible for the development of new positron-emitting radiopharmaceuticals for PET, in addition to the routine production of these agents for clinical research studies. New radiopharmaceuticals made available in FY '91 include 3 ¹¹C fatty acids, 11 C-raclopride and ¹⁸F DOPA by a high yield procedure. Automation of specific synthesis techniques continues, so as to facilitate the production of pharmaceuticals and to minimize the radiation dose to the production staff.

Clinical protocols studying the brain and cardiovascular system have continued in FY '91. These include several studies to map the response of the human brain during neurobehavioral tasks, such as movement and cognitive activity, by determining local blood flow changes during these tasks. Ongoing PET protocols continue to study the pathophysiology of a wide variety of conditions affecting the central nervous system, including Alzheimer disease, normal aging, brain tumors, epilepsy, Parkinson disease and other movement disorders, schizophrenia, and depression.

NMD continues its collaborative research program in the diagnostic and therapeutic applications of radiolabeled monoclonal antibodies. The major objective of this program, which includes interactions between NMD and several NCI branches and laboratories, is to optimize the use of radiolabeled antibodies to detect and treat various cancers. The ongoing clinical studies are attempting to define the pharmacokinetics of radiolabeled antibody distribution in patients with cancer, determine those characteristics of the test that are important to ensure tumor targeting, assess the safety of these procedures for the cancer patient, and provide a preliminary determination of the efficacy of these tests in the diagnosis and treatment of various cancers. Current emphasis is on radioimmunotherapy. Promising preliminary results have been obtained in patients with adult T-cell leukemia and cutaneous T-cell lymphoma.

Collaborative studies with NHLBI have made significant contributions in the evaluation of cardiovascular disease including: 1) assessment of myocardial viability; 2) silent ischemia; 3) left ventricular diastolic function; 4) hypertrophic cardiomyopathy; 5) aortic stenosis; and 6) microvascular angina. These studies utilized nuclear medicine procedures including gated cardiac blood pool, thallium SPECT, PET in conjunction with MRI studies.

NMD expanded its affiliation with the nuclear medicine department at the Bethesda Naval Hospital. The department also has strong ties with Children's Hospital in Washington, D.C. The NMD training program is accredited by the Joint Commission on Accreditation of Healthcare Organizations, the American College of Nuclear Physicians, and the Nuclear Regulatory Commission.

The Department of Rehabilitation Medicine continues to support NIH biomedical research through its efforts in patient care and collaborative research. Major efforts in FY '91 have been in the functional and developmental evaluation of children with HIV and in determination of functional status of patients with polymyositis and Alzheimer disease.

A grant supported by the Fogarty International Center for a Latin American initiative was awarded to a staff physical therapist for a community-based project to determine the efficacy of prevention of lower extremity lesions associated with trauma, infection, and dysvascular and diabetic conditions. The therapist went to rural Brazil to assess the feasibility of such an intervention.

■■■ *THE REHABILITATION MEDICINE DEPARTMENT WILL PROVIDE HIGHEST QUALITY REHABILITATIVE CARE FOR ALL NIH PATIENTS 100 PERCENT OF THE TIME. THE REHABILITATION MEDICINE DEPARTMENT WILL CONTRIBUTE TO A BETTER UNDERSTANDING OF DISABILITY, PREVENTION, AND TREATMENT, AND WILL ACHIEVE RECOGNITION AS A CENTER OF EXCELLENCE IN TRAINING AND RESEARCH. THE DEPARTMENT WILL CREATE A COOPERATIVE WORK ENVIRONMENT FOR PATIENT CARE AND RESEARCH THAT PROMOTES PERSONAL AND PROFESSIONAL GROWTH AND ALLOWS EMPLOYEES TO IDENTIFY AND AFFECT CHANGE.* ■■■

A technique was developed to visualize the three-dimensional tongue surface during speech production using multiple two-dimensional ultrasound scans. The technique incorporates computer image and speech processing methods to create a dynamic image of the tongue surface. Sagittal and coronal views are temporally and spatially aligned and displayed simultaneously with acoustic spectral data. This allows the speech researcher access to an abundance of information in a concise visual format. This technique also has potential application for comparing normal and abnormal lingual dynamics for swallowing and other nonverbal activity. Techniques to analyze videofluoroscopic swallowing parameters are in their initial developmental stage and will offer the clinician a new venue for understanding this important process.

A new program structure has been developed in the mental health program that has shifted unit-based occupational therapy to the Rehabilitation Medicine Department. This program offers treatment to groups of patients based on their functional levels, rather than their diagnostic grouping. An innovative computer training program has been developed to assess and provide treatment to mental health patients in need of improving vocational and functional skills.

Ongoing characterization of gait using 3D real-time assessments have demonstrated that normal subjects with high-arched (cavus) and flat feet (planus) have very similar mechanics of stride and

lower limb motion. Additionally, patients with rheumatoid arthritis who have arthritis of the forefoot are slow to transfer weight to the forefoot and have decreased foot angle to the floor. This suggests that the foot functions very poorly as a lever in helping to propel the body forward.

A significant deficit in the Rehabilitation Medicine Department has been the availability of space for treatment and evaluation of children. The department developed a Total Quality project to design space suited for children and to help educate staff in the application of clinical evaluation for motor and cognitive evaluation of children.

TRANSFUSION MEDICINE

Approximately 90 percent of the Department of Transfusion Medicine employees have completed the Quality Together training. The goals set forth in the vision statement stress DTM's primary functions: to supply safe and effective blood components to Clinical Center patients, to maintain active research and educational programs, and to develop staff potential in all areas of the department.

DTM dedicated its new wing in April. The excellent new donor facilities are in part responsible for increased blood and component collections, now more than 95 percent of Clinical Center patient needs. The transfusion-transmitted viruses laboratory was also renovated during the year. Studies from this laboratory have helped to better define the risks of hepatitis C in blood transfusion and develop methods for decreasing these risks. The transfusion-transmitted viruses laboratory performed more than 125,000 tests during the year, an increase of 29 percent over FY '90. The majority of the specimens were from blood donor and patient services. However, a substantial number of tests were performed to support NIH intramural research protocols.

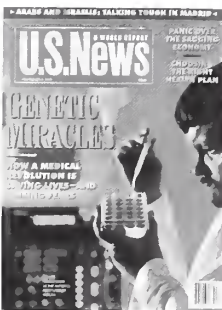
■■■ *AS THE PREMIER HOSPITAL-BASED TRANSFUSION MEDICINE DEPARTMENT, THE DEPARTMENT OF TRANSFUSION MEDICINE WILL PROVIDE A NETWORK OF LIFE-IMPROVING SERVICES THAT EXCEEDS THE EXPECTATIONS OF ITS PATIENTS, DONORS, SCIENTISTS, NIH STAFF, AND THE PUBLIC. TO PERFORM THESE SERVICES IN AN EFFICIENT AND COST-EFFECTIVE MANNER, THE DEPARTMENT WILL RECRUIT AND RETAIN THE MOST HIGHLY QUALIFIED STAFF. DTM SEEKS TO IMPROVE ITS EXCEPTIONAL CONSULTING SERVICES AND WILL CONTINUE STRONG EMPHASIS ON EDUCATION BOTH INTERNALLY AND EXTERNALLY. THROUGH INNOVATIVE RESEARCH PROGRAMS, DTM WILL CONTINUE TO ADVANCE SAFE TRANSFUSION PRACTICES AND BE A LEADER IN TRANSFUSION MEDICINE RESEARCH THROUGHOUT THE WORLD.* ■■■

The first departmental employee appreciation day was held to formally recognize employees for awards and honors received during the year.

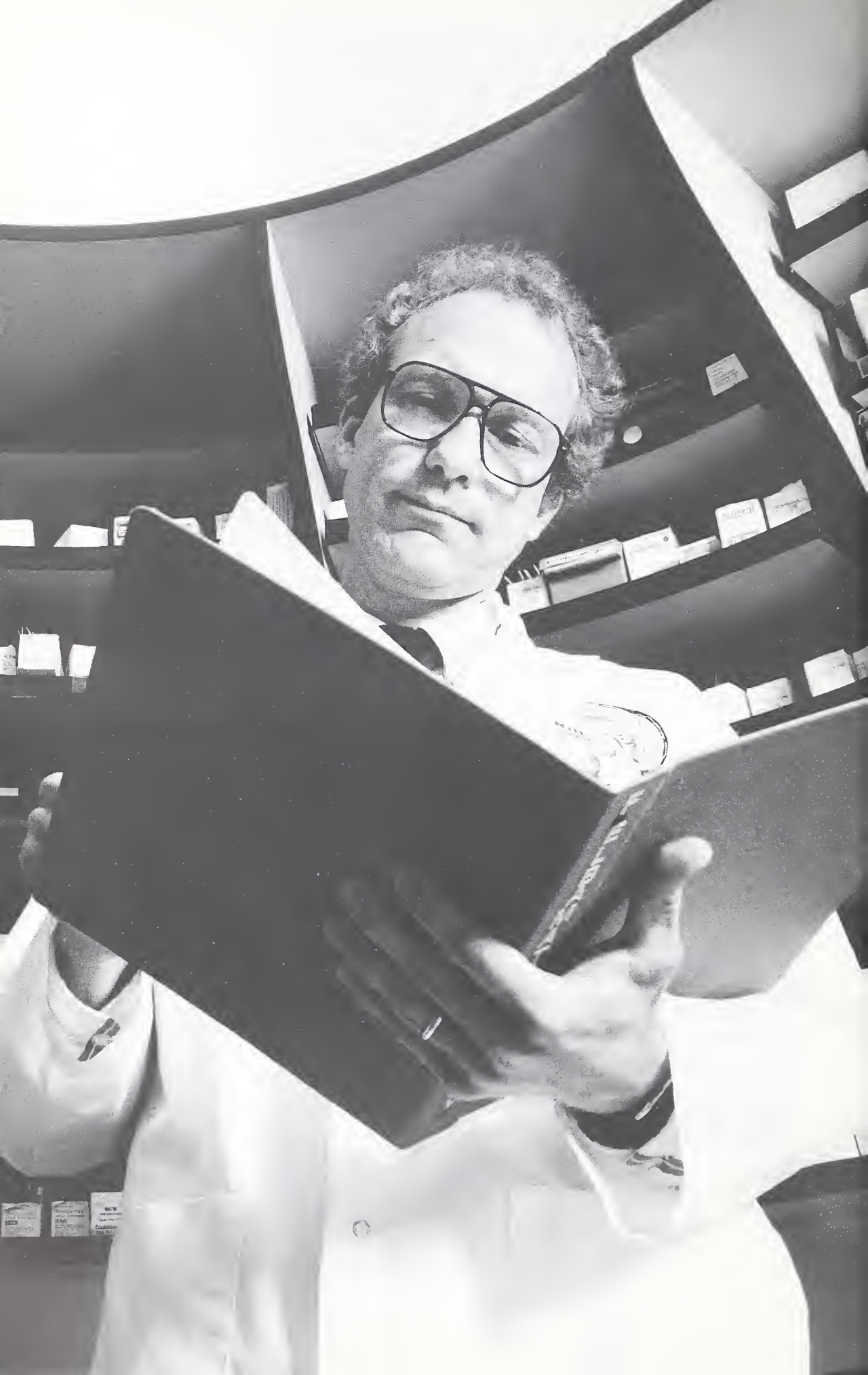


The first patient to receive somatic cell gene therapy completed the first year of treatment and continues to thrive. Cells expressing the inserted (ADA) gene can be detected in her blood. The second patient is in the first year of treatment and she also remains clinically well. DTM continues to be a world leader in this technology.

The bone marrow program continues to grow. The department now lists more than 21,000 unrelated donors, has completed 27 marrow harvests, and has 10 harvests pending. In the laboratory, the department responded to the increasing demand for marrow processing, storage, and infusion with a dedicated program based in the special services laboratory.



In the area of education, the DTM specialty in blood bank training for technologists has been accredited for an additional five years by the American Association of Blood Banks. The physician fellowship program in immunohematology and blood banking was accredited for an additional three years, and the curriculum was cited as a model for other programs inspected by the American Council of Graduate Medical Education. Once again, the trainees won competitive research awards and presented research papers at several national medical meetings. The department's 10th annual scientific symposium filled the Lister Hill auditorium. This year's topic concerned transfusion-transmitted infection.



NURSING

The Nursing Department strives to attract the most caring and highly educated nursing staff to administer the highest quality and compassionate patient care to the patients of the NIH Clinical Center. Based on the unique patient population and the challenges inherent in the research protocols conducted at the Clinical Center, the Nursing Department met and accepted the challenges of the past year.

Many programs were implemented during FY '91. The cancer day hospital, established in April 1990, was able to rise to its maximum capacity of treating more than 800 patients a month by June 1991. The day hospital on 9 East (NIAMS and NIDDK) handled 65 patients per month and a new day hospital on 11 East was established to meet the short-term needs of the NIAID. In response to the Clinical Center goal for cost efficiency, the Nursing Department was also able to realize a 12 percent reduction in overtime costs through more efficient accounting and tracking of the staffing patterns and scheduling practices. Other innovations included a day treatment room for phase I cardiology patients and an increased psychiatric patient population treated as outpatients on selected inpatient units.

■■■ *THE NURSING DEPARTMENT IS COMMITTED TO PROVIDING EXCEPTIONAL QUALITY CARE THROUGH PRIMARY NURSING. IT VALUES THE UNIQUENESS OF AND EXCEEDS THE EXPECTATIONS OF EACH PATIENT, FAMILY SYSTEM, AND EMPLOYEE. ITS COMMITMENT IS TO PROVIDE AN ENVIRONMENT THAT FOSTERS EXCELLENCE THROUGH THE UNIQUENESS OF TEAMWORK, ORGANIZATIONAL UNITY, AND OPEN COMMUNICATION.* ■■■

One of the major initiatives of FY '91 was the introduction of the philosophy and process of Total Quality Management to the 800 employees of the department. During the summer months, all of the Nursing Department staff received information in the one-day seminar conducted off their units and taught by various members of the nursing staff trained in the TQM principles. The Nursing Department continues to participate in the Clinical Center Quality Together efforts in looking at ways to improve the services and nursing interactions of its customers—the patients, nurses, physicians, and other staff involved in daily routines concerned with nursing and patient care.

Changing patient needs and altered nursing solutions have generated research projects from all nursing services. Currently there

are 30 nursing research studies in process that focus on clinical aspects of care. Clinical nurse specialists with doctorates serve as mentors and resources to staff in identifying appropriate questions and research methodology. The Nursing Department continues to collaborate with the Center for Nursing Research and the chief nurse of the Public Health Service to identify education, practice, and administrative issues that affect national health needs that nursing can work toward improving. A protocol implementation project was designed as a pilot to improve planning and the Clinical Center's response to new studies. The clinical nurse specialists provide an assessment of the patient care needs for nursing as well as for all Clinical Center departments.

Members of the Nursing Department are highly visible in the local and national nursing community as a result of numerous extramural presentations and other professional activities. More than 40 staff members received nominations for awards and recognition in the past year. Several nurses were activated from reserves into active duty at local and overseas military hospitals. In a collaborative agreement with the U.S. Naval Medical Center, nursing units in the Clinical Center were prepared to support civilian medical care during Operation Desert Storm. In collaboration with the American Red Cross, four staff members were detailed to Kuwait in April and May in the aftermath of the Desert Storm operation to assist with the recovery program in Kuwait.

Publication in textbooks and journals continues to highlight the accomplishments of the department. The cancer nursing service hosted a national conference in "Progress in Cancer Treatment" in October 1990, which attracted more than 400 participants. The mental health nursing service designed a one-week summer program for nursing faculty to develop and expand their understanding of biological psychiatry practiced at NIH, which serves as the leading force in psychiatric nursing. The mental health service also sponsored a conference on "State of the Art and Science" in the spring. The critical care service offered a national conference on quality assurance and participated in the National Training Institute for critical care nurses.

In addition to faculty and graduate nurse internships, the department also provides summer programs for nursing externs, which allow student nurses to participate in patient care and learn the basics of the research practices and protocols conducted at the Clinical Center. The department has attracted more than 30 students during the summer and has sponsored 10 students in USPHS scholarship programs resulting in improved recruitment to the nursing staff. Other programs provide for graduate and undergraduate courses and clinical rotations by members of the nursing staff. Several groups of nurses from various regions of the United

States and from foreign countries toured the patient care units and Clinical Center facilities, especially the computerized nursing systems, that are nationally renowned. In the past months, the department has undertaken a major effort at computerizing the nursing staffing and scheduling system, which will result in a more efficient tracking and planning method for providing planned patient care in the inpatient as well as outpatient areas.

Recently the Nursing Department has been able to fill its vacancies for staff in hard to fill areas, such as neurology, cardiology, and pediatric endocrinology. Areas in AIDS and medical intensive care continue to be a focus for recruitment. There has been an overwhelming response to journal and classified advertisements for Clinical Center nursing, including the bone marrow unit, which is under construction for 1992. Interviews and hiring rates have increased threefold in the last quarter under the direction of a new nursing marketing director and strategic plan for nurse recruitment and retention. Major innovations in orientation and evaluation of customer satisfaction have resulted in improved problem solving and planning for nurse retention.

In keeping with the Clinical Center goals for quality improvement and staff and customer participation, the Nursing Department looks forward to a year of challenge and success in supporting and initiating outstanding patient care practices and research achievements.

NUTRITION

One of the Nutrition Department's primary responsibilities is to provide meals and nutritional services to Clinical Center patients. The staff also supplies snacks, beverages, and nutritional supplements to other departments and clinics for service to patients and provides research support to investigators.

■■■ *THE NUTRITION DEPARTMENT WILL STRIVE TO PROVIDE MEAL SERVICES, NUTRITIONAL CARE, AND RESEARCH SUPPORT THAT EXCEED THE EXPECTATIONS OF PATIENTS, STAFF, INVESTIGATORS, AND THE PUBLIC; FOSTER OPPORTUNITIES FOR PERSONAL AND PROFESSIONAL DEVELOPMENT; AND PROMOTE "ESPRIIT DE CORPS" WITHIN THE DEPARTMENT AND THROUGHOUT THE CLINICAL CENTER.* ■■■

In FY '91, the Nutrition Department began a process of continuous quality improvement with emphasis on increasing patient satisfaction, improving the morale of its staff, and promoting more teamwork as a means to decrease costs, errors, and inefficiencies. The department pursued its commitment toward continuous quality improvement by providing awareness training to staff, establishing a guidance or management team, conducting an extensive customer analysis, and developing an annual quality plan.

Significant advances were made to improve services. Updated standards of care enabled registered dietitians to provide state-of-the-art, comprehensive, nutritional care. Dietitians increased their use of bioelectrical impedance and other anthropometric measurements to provide investigators with detailed body composition data. Implementation of two nutrient databases permitted these clinicians to provide extensive nutrient analysis data to support research protocols. Nutrient databases are now utilized to evaluate the nutritional adequacy of menus and patient meal selections, and to calculate actual nutrients consumed. Patient menus were revised to comply with the dietary guidelines for Americans and to include foods suggested by patients and staff.

Patients are provided opportunities to select their meals from a two-week cyclic menu, which is available for 99 diet modifications that are continuously developed and/or revised to meet protocol needs. Menu and formulary items are constantly updated to include seasonal food and new products respectively. Breakfast, lunch, dinner, and snacks are prepared daily in the main kitchen by a staff of skilled cooks. An automatic tray assembly line enables food service workers and supervisors to assemble and deliver more than 1,100 meals and snacks per day to patient bed-sides. During FY '91, the Nutrition Department expanded its scope of service to outpatients by assuming responsibility for meal delivery.

In accordance with its vision, the Nutrition Department will strive to provide world-class food service and exceptional nutritional care.

OUTPATIENT

The Outpatient Department initiated multidisciplinary efforts in the 12th and 13th floor clinics to improve the efficiency of the clinics. This procedure will be initiated in other clinics during the coming year.

The chief of the Outpatient Department has overseen the development of several OPD staff committees to improve the quality of work life within the department, including awards, newsletter, leave abuse policy, and Outpatient Department steering committees.

The Outpatient Department manages approximately 45 clinics and the EKG, echo, and stress laboratories, where 164,000 outpatients were seen in FY '91, as well as the admission, voucher, and local transportation sections, Ober United Travel Agency, and the patient escort service. Each section provides special services to Clinical Center patients to ensure smooth and efficient progress through inpatient and outpatient areas.

The admission section is the first stop for all new inpatients and outpatients. They are greeted by a supportive staff that ensures the accuracy of all admission information. The staff is also the administrative liaison between the Clinical Center personnel who are on call after hours.

■■■ *THE OUTPATIENT DEPARTMENT WILL PROVIDE COMPREHENSIVE SERVICES AND CONVENIENT ACCOMMODATIONS THAT WILL ANTICIPATE, MEET, OR EXCEED THE EXPECTATIONS OF PATIENTS, STAFF, INVESTIGATORS, AND THE PUBLIC; TO FOSTER A POSITIVE WORK ENVIRONMENT FOR THE EMPLOYEES, WHICH WILL PROMOTE BETTER COMMUNICATIONS AND TEAM SPIRIT BETWEEN ITS STAFF AND CUSTOMERS; AND TO PROVIDE EDUCATIONAL PROGRAMS THAT SUPPORT THE CONTINUED PROFESSIONAL AND PERSONAL DEVELOPMENT OF STAFF MEMBERS.* ■■■



The medical clerks in each of the nine outpatient clinic floors provide administrative support, supplies, and medical equipment for the professional staff. The medical clerks greet patients upon their arrival to the clinics and help them through a whirlpool of confusion.

The contract for the patient escort service has been in place for six years and has made a positive contribution to the hospital. The escorts are efficient and effective as they transport patients and specimens throughout the Clinical Center.

The Ober United Travel Agency offers convenient and friendly travel services for Clinical Center patients and NIH staff.

PATIENT ACTIVITIES

The Patient Activities Department has worked effectively in developing a new strategic plan and has interfaced those efforts with the new Quality Together process. The department made measurable and significant gains (close to 10 percent) in its clinical documentation efforts, achieving a FY '91 cumulative rating of 96.5 percent on a rigorous chart monitoring system developed over the last three years.

■ ■ ■ *THE PATIENT ACTIVITIES DEPARTMENT IS DEDICATED TO EXCELLENCE. IT STRIVES TO PROVIDE STATE-OF-THE-ART THERAPEUTIC RECREATION SERVICES THAT EXCEED THE EXPECTATIONS OF CLINICAL CENTER PATIENTS AND STAFF. IT ENVISIONS MANAGEMENT AND STAFF WORKING TOGETHER, CREATING AN ATMOSPHERE TO LEARN AND GROW, EMPOWERING THE DEPARTMENT TO BECOME A FORERUNNER OF INNOVATIVE THERAPEUTIC RECREATION SERVICES.* ■ ■ ■

The mission of the Patient Activities Department is to promote the importance of recreation and leisure for total well-being, and protect this part of the patient's life from being negatively affected by the illness and medical care in a research setting.

The role of the Patient Activities Department is based on the premise that healthful, self-directed recreation and leisure experiences are necessary for the physical, emotional, and social well-being of all individuals, and can actively contribute to the recovery of hospitalized persons. Carefully planned programs that preserve individual uniqueness aid in the comfort of these individuals, and can support and reinforce autonomy and the dignity of choice. Such programs can also provide a means of restoration, remediation or rehabilitation toward improved functions and quality of life. They also help patients cope with the stress associated with illness, hospitalization, and the realization of an uncertain future.



In support of biomedical and clinical research at the Clinical Center, patient activities services are designed to foster involvement, choice, enjoyment, coping, and improved function. These services are consistent with assessed needs and limitations of each patient.

PATIENT REPRESENTATIVE

The patient representative program was developed in the belief that all members of the health care team, as well as those who impact patients in other capacities, are united in their efforts to provide quality care in a humane manner to subjects who volunteer as patients in support of the research mission of the Clinical Center. The cooperation of patients—not only as partners in research and recipients of care, but as informed and willing witnesses to the efficacy of the process—is essential for success in this ongoing pursuit of excellence. The role of the patient representative program is to provide support and assistance to patients and staff in a manner that augments communication, promotes understanding, and enhances awareness of the needs and perceptions of others.

An experienced corps of trained volunteer patient representatives meet personally with inpatients new to the Clinical Center to reinforce their understanding of the conditions of admission and the need to be aware of their options and make informed choices, as well as their responsibility to meet the requirements of protocols and observe Clinical Center policies. Volunteer representatives also staff the family waiting area, providing comforting assurance to loved ones so they will have the support they need during the long hours of surgery and intensive care.

The program director assures a timely response to all requests for assistance on behalf of patients, whether from the patients themselves, their family members, or concerned staff, and works with personnel throughout the hospital to clarify misunderstandings, resolve problems, and address grievances. Through advocacy on key committees and task forces and through written reports, the patient representative strives to keep the hospital aware of patient perceptions and experiences.

In FY '91, volunteer patient representatives oriented more than 1,500 patients and families, most of them on the first admission, and ministered to an average of 35 people each weekday in the surgical and intensive care waiting area. The program director responded to more than 200 individual requests for assistance, a small percentage of which were grievances. Most were successfully addressed with the cooperation and assistance of the hospital staff.

PHARMACY

The Pharmacy Department serves all Clinical Center inpatients and outpatients who are undergoing any type of drug therapy. Clinical pharmacists are assigned such patient care areas as cardiology, mental health, oncology, intensive care, and internal medicine. These specialists work directly with patients and consult with professional staff regarding drug therapy.

A computerized network links all areas of the pharmacy and maintains detailed records of the quantity, dates, and times that drugs are dispensed to each patient. These extensive patient records are essential; the Pharmacy Department must account for every dose of investigational drug and maintain the integrity of customized drug regimens.

All investigational drugs dispensed to Clinical Center patients are registered and controlled by the department. Approximately one million investigational drug units are made and two million are registered and labeled each year. Tablets, capsules, or injections are prepared as required by the protocol. Pharmaceutical chemists test the potency and stability of the drugs manufactured by the Pharmacy Department.

■■■ *THE PHARMACY DEPARTMENT PROVIDES PATIENT-ORIENTED PHARMACEUTICAL CARE OF THE HIGHEST QUALITY, EMPHASIZING RATIONAL, COST-EFFECTIVE PHARMACOTHERAPY AND INNOVATIVE PHARMACEUTICAL RESEARCH. IT STRIVES TO EXCEED THE EXPECTATIONS OF PATIENTS, INVESTIGATORS, AND CO-WORKERS IN AN ENVIRONMENT THAT PROVIDES THE PHARMACY STAFF WITH MOTIVATION, CHALLENGE, AND PROFESSIONAL GROWTH.* ■■■

The inpatient pharmacy mixes an average of 750 IV admixtures each day; however, there are some days when the workload exceeds 1,000. To prepare an admixture, the pharmacists add concentrated drugs to plastic bags containing sterile saline or dextrose in water. Intravenous solutions are prepared under rigorous standards of sterility and quality control by specially trained pharmacy personnel to ensure that none of the medications mixed in intravenous solutions interact or become unstable. To prevent contamination by airborne materials, solutions are prepared in laminar flow hoods that filter out dust and bacteria.

The inpatient pharmacy dispenses close to one million unit doses of medicine each year. Most patients receive their medicines through a "unit dose" distribution system. To ensure that each patient receives the correct dose of the correct drug at the correct time, a 24-hour supply of unit dose medicines is placed in a drawer labeled with the patient's name and delivered to the nursing unit. Each dose is individually packaged, labeled, and protected from contamination up to the time it is administered. The

unit dose distribution system is the safest and most reliable way to give medications to inpatients.

The outpatient pharmacy fills prescriptions for outpatients, as well as inpatients who are on pass or about to be discharged. The outpatient pharmacy fills approximately 400 prescriptions each day. Medications are mailed to patients who are in long-term studies and do not require frequent visits. The success of the treatment protocol depends on strict adherence to the directions of the prescribing doctor. To clarify any questions or misunderstandings, pharmacists counsel patients about their medications.

In FY '91, support of AIDS research and treatment continued to be a significant pharmacy effort involving about 15 percent of the department's personnel resources. The department also continued to explore the possibilities of the Technology Transfer Act to share drug research information with private industry. Health education efforts in the outpatient pharmacy continued to increase. In addition to pamphlet racks, a patient reference library, and the "Drug Information" leaflets, a computerized patient self-reporting drug and medical history system is being tested. Within this system, a sophisticated data base will integrate the self-reported patient information with known allergies, adverse reactions, and disease states, and then provide a printout of the information.

SOCIAL WORK

The Social Work Department supports the Clinical Center's research efforts and quality patient care by helping patients and their families with personal and social problems related to illness and hospitalization. Through counseling services, social workers help patients cope with the requirements of research studies.

Unlike a community hospital where patients are likely to have their support structure close at hand, the Clinical Center hosts patients from around the world. Thus, it is important for the Social Work Department to fill gaps and offer support for patients far from their traditional networks of aid and comfort. The department provides support services to patients and their families. Its major priorities are mental health, discharge planning, crisis intervention, rehabilitation, community liaison, and coping with the process of death and dying.

With professional training of how psychological, social, and physical health factors may interact, social workers interpret individual responses to illness and hospitalization and counsel accordingly. Clinical intervention helps each patient and family restore, sustain, or improve strength for coping in the present and planning

for the future. In FY '91, the staff counseled more than 6,700 patients.

Located in the Social Work Department, the HIV counseling program coordinates HIV counseling services to newly diagnosed HIV-positive and AIDS patients and their families. Transmission issues, financial and community resources, and ongoing psychological counseling services are available, including coordination of resources for patients returning to other states.

■■■ *THE SOCIAL WORK DEPARTMENT WILL PROVIDE STATE-OF-THE-ART CLINICAL SOCIAL WORK TO PATIENTS AND FAMILIES TO ENHANCE THEIR QUALITY OF LIFE AND MAXIMIZE COMPLIANCE WITH RESEARCH PROTOCOLS; CONSULTATION AND TRAINING TO THE MULTIDISCIPLINARY TEAM ON THE ESSENTIAL INTERVENING PSYCHOSOCIAL VARIABLES IMPACTING ON PATIENT CARE; AND OPPORTUNITIES FOR STAFF EDUCATION, RESEARCH, AND PUBLICATION TO ENHANCE PRACTICE, QUALITY ASSURANCE, AND PROVIDE LEADERSHIP IN THE FIELD OF MEDICAL SOCIAL WORK.* ■■■

The volunteer services program, staffed by a full-time director, is an integral part of the department. The program offers a wide range of volunteer opportunities to community people interested in assisting researchers, nurses, physicians, and other patient care specialists in delivering quality health care and emotional support to patients and families. In FY '91, approximately 200 individuals volunteered more than 34,000 hours through programs sponsored by the retired senior volunteer program, the American Red Cross, the Clinical Center volunteer program, and special interest groups.

Volunteers provide many personal services that help patients and families adjust more easily to the hospital environment. In support service areas, volunteers provide foreign language interpreters service, give general information, provide some escort services, deliver mail and flowers to the bedside, answer telephones, assist patients with menu selection, provide refreshments to patients and families in waiting areas, and contribute to a variety of craft activities.

Staffed by a full-time director, the normal volunteer program recruits paid normal control subjects for research protocols. All normal volunteer requests are maintained in a central area to assist any perspective volunteer in the selection and application process. The normal volunteer program also maintains university contracts typically bringing pre-med and nursing students into NIH for one academic semester as normal volunteers who are also given a work assignment usually in a laboratory. The normal volunteer program administers more than \$900,000 a year in reimbursement to these valued control subjects.

SPIRITUAL MINISTRY

Many patients and families find that religion plays a vital role in their hospitalization.

Catholic, Jewish, and Protestant chaplains on the staff are available to help patients and their families find strength from their faith. Chaplains are cognizant of the needs of all patients and often act as liaisons on behalf of a patient to involve a representative of their own faith group in their spiritual care while at the Clinical Center.

The highest priority in spiritual care is personal visitation of a chaplain with patients and their loved ones. Last year, the chaplains made more than 10,000 bedside visits. During these visits, chaplains actively listened and sensitively engaged in conversation about the patient's current experiences in light of the patient's spiritual orientation and religious heritage as they impact on the present and future.

Religious rites and observances are another aspect of spiritual care. Religious services for all major faith groups are conducted in the 14th floor interfaith chapel. Roman Catholic chaplains conduct mass each day; Protestant chaplains lead worship on Sundays; and the Rabbi conducts a Sabbath service on Friday afternoons. An interfaith mid-week devotional service is led by the clinical pastoral education student or by another member of the department. A volunteer staff liaison of the Muslim community leads prayers daily. Memorial services are provided for individual patients, and small spiritual care groups meet in various areas of the Clinical Center for patients and families.

■■■ *THE SPIRITUAL MINISTRY DEPARTMENT, THROUGH ITS CHAPLAINS, WILL PROVIDE SPIRITUAL CARE TO ASSIST PATIENTS AND THEIR LOVED ONES IN COPING WITH THE CHALLENGE AND CRISIS OF HOSPITALIZATION. THE CARE WILL BE GUIDED BY CALLING FORTH THE POSITIVE RELIGIOUS AND SPIRITUAL RESOURCES OF THE PATIENT AND FAMILY. IT WILL BE CHARACTERIZED BY ADVOCACY, RELIGIOUS RIGHTS, COUNSELING, EDUCATION, AND MULTIDISCIPLINARY COLLABORATION.* ■■■



Chaplains participate in interdisciplinary meetings on nursing units, bioethics consultations, supervision of students learning the art of clinical ministry, educational forums, institutional review boards, and community outreach programs. In addition, chaplains represent NIH at various national organizations of both ecclesiastical and secular professionals and accentuate the connection between spirituality and health. Department staff members frequently appear on educational panels and publish in journals, newsletters, and books. One of the department's chaplains received a Bronze Star for his meritorious service while deployed as an army chaplain in Operation Desert Storm. He had supervisory responsibility in the distribution of food, clothing, emergency medical care, and other humanitarian relief activities while in occupied Iraq.

The national accreditation commission of the Association for Clinical Pastoral Education granted the Spiritual Ministry Department's clinical pastoral education program full accreditation for the next seven years. Sixteen students received credit for a unit of clinical pastoral education in FY '91.

SURGICAL SERVICES

The Surgical Services Department, located on the second floor D wing of the ACRF, provides 24-hour care seven days a week for all Clinical Center inpatients and outpatients. The staff includes registered nurses, health technicians, anesthesia technicians, and administrative support staff. All team members play a part in the Surgical Services Department Quality Together program, a process that encourages quality and improvement at all levels.

■■■ *THE OPERATING ROOM STAFF WILL PROVIDE THE HIGHEST QUALITY SERVICE THAT EXCEEDS THE EXPECTATIONS OF PATIENTS AND STAFF. IT WILL ACHIEVE AND SUSTAIN A POSITIVE ENVIRONMENT THROUGH TEAMWORK, EFFECTIVE COMMUNICATION, PROFESSIONAL DEVELOPMENT, AND EFFICIENT RESOURCE MANAGEMENT.* ■■■

The operating room provides services for major and minor surgery for all 13 institutes. Major surgical procedures include photodynamic therapy performed by NCI surgeons using an Argon Pump Dye LASER. These cases are performed in the satellite operating room in the B3 Radiation Therapy Department. In FY '91, 51 patients were treated, including 30 thoracic, four bronchial, 10 abdominal, six bladder, and one nasopharyngeal patients. A second type of Argon LASER is used by the ophthalmology surgeons for patients with posterior chamber bleeding problems. This procedure was used for three patients. The CO₂ LASER, utilized by the neurosurgery group, is used in conjunction with traditional instrumentation. Patients requiring this form of LASER surgery include those with spinal A-V malformations, and

hemangiomas associated with von Hippel-Lindau disease. ENT surgeons utilize the CO2 LASER during laryngoscopy for subglottic stenosis and tracheal-laryngeal plasty.

IN FY '91, the number of outpatients admitted to the operating room increased to 372, a 2.5 percent increase over FY '90. Change is also reflected in the types of procedures performed. The surgical schedule includes more non-invasive "state-of-the-art" diagnostic procedures, such as endoscopic ultrasound for disease of the esophagus, stomach, and pancreas. The equipment is also used for localization of pancreatic islet cell tumors and staging of cancer patients with respect to depth of tumor penetration and lymph node metastasis. Endoscopic procedures are now performed for gastric and gastric-esophageal cancers with video monitoring, taping, and photography. This same video equipment serves an important role in the cystoscopic procedures and bladder tumor resections; the photographs are an invaluable addition to the patients' records. Lithotripsy probes are used for breaking up larger bladder stones with the aid of the video equipment. The prostatic ultrasound has attachments for needle biopsies, measuring gland volume, and recording all information for the chart.

A new operating room is attached at the back of the main suite. The department began moving equipment and supplies into the addition, with a target date for the first operative procedure to be spring 1992. The cardiac cath lab shares space with the Surgical Services Department in the addition, which houses one neurosurgery and two general surgery operating rooms with accessory work rooms and sterile storage. One of the general surgery rooms will function as the PDT room. Also, a new Argon Pump Dye LASER will be installed, and the photodynamic therapy procedures will be moved from the satellite operating room in B3 radiation to the main operating room.



HOUSEKEEPING AND FABRIC CARE

Cleaning the seven miles of corridors, over 1,000 laboratories, 28 patient care units, and 11 clinics in Building 10 required 216 personnel, each of whom is continually trained in the latest techniques.

The Housekeeping and Fabric Care Department strives to maintain a safe and sanitary environment throughout the Clinical Center, and provides linen service to other NIH installations on the Bethesda Campus, the Poolesville animal farm, the Landau and Westwood buildings, the Baltimore Cancer Research Center, St. Elizabeth's Hospital, and The Children's Inn. In addition, the department services Clinical Center elevators, tests various products and equipment, and copes with and studies day-to-day environmental problems within Building 10.

■■■ *THE HOUSEKEEPING AND FABRIC CARE DEPARTMENT WILL STRIVE TO CONTINUE TO PROVIDE THE HIGHEST STANDARDS FOR CLEANLINESS AND LINEN SERVICE CONSISTENT WITH THE NEEDS OF THE CLINICAL CENTER OCCUPANTS AND VISITORS. THE DEPARTMENT WILL TRAIN EMPLOYEES TO EXCEED THE EXPECTATIONS OF THEIR CUSTOMERS, WHILE CONTINUING TO IMPROVE THE QUALITY OF THEIR JOB.* ■■■

In support of the department's Total Quality Management vision statement, several initiatives were taken. Part-time help is being recruited so that more area can be covered in less time within the resource allocation. A new method to maintain tile floors was introduced that requires less effort and does not require mopping, thereby reducing the potential for slips. The carpet maintenance program was improved through the utilization of more vendors and closer monitoring. Recycling was expanded to include aluminum cans.

A five-year contract that was awarded for linen processing and delivery throughout NIH is projected to save \$900,000 during the contract period. Delivery to patient care areas and alterations of uniforms remain the responsibility of the fabric care employees. Upgrading the par stock shelving on the units to keep the linen covered was introduced on several units and continues to be expanded.

In the coming year, the department plans to move forward in its Quality Together process by surveying its customers and develop-

ing improvement projects based on their needs. Recruitment and training for part-time help will continue. The department also intends to upgrade the elevator service by keeping the operators more informed of the activities within the building.

INFORMATION SYSTEMS

Established in 1983, the Information Systems Department consolidates the planning, development, operations, and maintenance of Clinical Center computing activities. The department operates a computer center providing round-the-clock service to patient units, clinical pathology, pharmacy, radiology, admissions, and other departments engaged in administrative, diagnostic, and therapeutic activities. In addition, ISD provides advice and support to Clinical Center departments that have or are contemplating acquiring micro- or minicomputers, or other computer hardware or software.



ISD manages and operates the Clinical Center Medical Information System, a large “real-time” computerized system that provides access to patient records to retrieve and add data. Medical orders are entered directly by physicians or nursing personnel using video terminals and personal work stations (IBM-compatible and Macintosh) that connect to a central computer. Patient information is displayed on video screens and printed for incorporation into the patient record.

CCMIS is used by more than 4,000 physicians, nurses, and other hospital professionals in the Clinical Center. Each year ISD trains approximately 275 physicians, 300 nurses, and 550 other staff members to use the system. There are more than 250,000 patient biographical records on file, with complete clinical records retained on the system for all current patients. On a typical day, 1,200 different hospital staff members make 8,800 distinct accesses to CCMIS; write 5,300 orders; and request nearly 20,000 online patient retrievals for 2,000 different patients. In FY '91,

more than one million records were added to the system and a like number of vital sign entries; more than 10 million pages of patient medical records were printed. The total patient information on disk files, available for instant retrieval, exceeds two billion characters. In addition, patient data on 200,000 former Clinical Center patients are maintained at the Division of Computer Research and Technology for retrospective research studies.

■■■ *THE INFORMATION SYSTEMS DEPARTMENT PROVIDES HOSPITAL-WIDE ELECTRONIC INFORMATION SYSTEMS AND SERVICES THAT USE STATE-OF-THE-ART TECHNOLOGY; ARE RELIABLY AND RESPONSIBLY OPERATED; SUPPORT PATIENT CARE AND CLINICAL RESEARCH; ARE EFFECTIVELY USABLE DIRECTLY BY ALL HOSPITAL STAFF; MEET THE CLINICAL CENTER DEPARTMENTAL AND INSTITUTE NEEDS AND REGULATORY REQUIREMENTS; AND PROVIDE HOSPITAL MANAGEMENT INFORMATION AND ADMINISTRATIVE SUPPORT. THE DEPARTMENT SUPPORTS THE PROFESSIONAL GROWTH OF ITS MEMBERS, DEVELOPS THE TECHNOLOGY OF MEDICAL INFORMATICS, AND RESPONDS EFFECTIVELY TO THE NEEDS OF THE HOSPITAL STAFF.* ■■■

To provide support for the wide range of CCMIS users, ISD maintains 27,000 screen display formats and hundreds of printout formats. During FY '91, ISD created more than 5,000 new or revised screen formats (which included coding 50 new and 80 revised research protocols and adding two new Clinical Center departments for online result reporting and retrieval), and handled 30,000 telephone calls related to CCMIS support and enhancement.

During FY '91, a major upgrade to the main CCMIS software neared completion (some time in the first half of FY '92). This upgrade involved extensive and detailed testing to provide a greatly expanded patient data base to retain more patient data on CCMIS, thereby benefitting both the patient care staff and their patients.

Although the medical information system continued to be a major focus of ISD during FY '91, its members also managed and completed projects to meet growing needs and requirements specified by Clinical Center departments and institutes. A major project to consolidate the clinical laboratory computer system onto the main CCMIS computers was completed. This included a switch-over from the old hardware while maintaining or improving its functional characteristics. The new laboratory system provides groundwork for many future improvements and enhancements.

During FY '91, ISD staff continued to develop hardware and software to connect Macintosh work stations to CCMIS. ISD began installing the Macintosh version of the multifunctional terminal (with new communication cards and networking) in patient care areas. ISD staff provided training for the work-station users.

Again, these work stations have potential for significant, long-term enhancements.

Other notable activities of FY '91 include continued progress on design and testing for Clinical Center local area networks and functional improvements in existing systems supporting such Clinical Center departments as transfusion medicine, pharmacy, medical records, and nutrition.

ISD began its education and training in the Clinical Center's Quality Together philosophy and formed a quality team to implement its first quality project: increase the effectiveness of intradepartmental communication to provide improved services to the Clinical Center departments.

MATERIALS MANAGEMENT

In the contemporary sense, materials management is the management and control of supplies, equipment, and services from acquisition to disposition. The scope of materials management can be wide and defined in many ways. The Clinical Center's Materials Management Department encompasses many activities, including procurement, shipping and receiving, equipment acquisition, and product evaluation; storage of supplies and equipment, and inventory control; materials handling, delivery, and pick-up of goods and supplies; and activities directly related to support services for patient care units, such as sterilization, sorting and wrapping of instruments, and management of supplies.

■■■ *THE MATERIALS MANAGEMENT DEPARTMENT WILL CONTINUE TO BE COMMITTED TO THE ACQUISITION, PROCESSING AND DISTRIBUTION, AND STORAGE OF CLEAN AND STERILE MEDICAL/SURGICAL SUPPLIES AND EQUIPMENT TO VARIOUS OTHER CLINICAL CENTER DEPARTMENTS. IT WILL OPERATE IN AN EFFICIENT AND PROFESSIONAL MANNER, UTILIZING METHODS AND TECHNIQUES DESIGNED TO SUPPORT AND FACILITATE NIH'S RESEARCH EFFORTS.* ■■■

In FY '91, the procurement staff processed 8,769 purchase orders for supplies and services in the amount of \$21,141,260. The inventory management responsibilities include both expendable and non-expendable items. The expendable inventory consists of more than 2,400 line items with an average monthly closing balance of approximately \$2 million. The Clinical Center's non-expendable inventory consists of 17,191 line items with an acquisition value of close to \$72 million.

The Clinical Center's Quality Together initiative to employ the team concept is not new to the Materials Management Department. The sole objective of the reorganization in FY '86,

which created the department, was to organize a materials management element to best meet the various Clinical Center departments' acquisition and supply needs and to train the staff to be customer-oriented.

In FY '91, a medical supply technician was assigned to handle the OR supply needs. This collaborative effort between the Materials Management Department and the Surgical Services Department will achieve operational cost reductions through effective management of materials and equipment, and the implementation of an efficient delivery system.

MEDICAL RECORD

The Medical Record Department provides diversified support services for patients, members of the medical staff, researchers, and Clinical Center administration who impact on the overall effectiveness of activity throughout the Clinical Center.

■■■ *THE MEDICAL RECORD DEPARTMENT SHALL STRIVE TO PROMPTLY AND EFFICIENTLY PROVIDE THE HIGHEST QUALITY RECORDS ADMINISTRATION AND DOCUMENTATION SERVICES NECESSARY TO ANTICIPATE, MEET, OR EXCEED THE NEEDS OF ITS CUSTOMERS. THE DEPARTMENT SHALL ATTRACT, RETAIN, DEVELOP, AND FOSTER THE MOST HIGHLY MOTIVATED AND WELL-QUALIFIED PERSONS FOR ITS STAFF. THE STAFF SHALL CONDUCT INTERACTIONS BETWEEN THEMSELVES AND THEIR CUSTOMERS WITH RESPECT, CONCERN, COOPERATION, AND A CHEERFUL WILLINGNESS TO SERVE.* ■■■

The department must provide on a timely basis medical records for use in the diagnosis and treatment of patients, medical and scientific research, and medicolegal or administrative activity. The medical record serves as a dynamic means of communication contributing to continuity of medical care, allowing continuous auditable accounting of patient management and facilitating accessibility to research data. In addition, the department must assure the approval of all research studies established for the treatment of patients at the Clinical Center and must coordinate the credentialing of all members of the medical staff.

To assure the effectiveness of the medical record, protocol review, and staff credentialing, the department must provide facilities and develop systems for the maintenance, analysis, storage, and retrieval of records, documents, and electronic files while preserving the legality and integrity of the data.

In order to fulfill its mission, the department employs medical record administrators, medical record technicians, and experienced clerical support staff.

Medical record administrators are health information professionals responsible for the overall management of the department.

including its people, systems, and 240,000 medical records of patients treated at the Clinical Center since 1953. Medical record administrators are responsible for establishing systems, data bases, and indices for treatment, research, health planning, and quality assurance. They develop departmental policies and procedures and supervise, train, and evaluate employees. Record administrators also contribute their unique expertise in many areas of the Clinical Center community by providing advice regarding record management; accreditation, regulatory and compliance documentation requirements; Privacy Act compliance requirements; and credentialing requirements.

Medical record technicians perform most of the important technical functions that are crucial to day-to-day operations. Technicians analyze record documentation for compliance with standards established by the Joint Commission on Accreditation of Healthcare Organizations, code diagnoses and operative procedures for later research retrieval, inspect and maintain the microfiche of retired records, and maintain controls relating to the completion of dictation, transcription, and their required signatures.

Clerical support staff retrieve and refile medical records that must be made available for every clinic visit and hospital admission. They file loose medical reports to ensure their security and accessibility and also maintain controls for record tracking.

The scope of the department effort can be appreciated by glancing at some figures for FY '91. Clerical support staff pulled more than 80,000 medical records for patient care, pulled 20,000 for research, and filed more than 500,000 individual medical reports. Medical record technicians performed approximately 30,000 medical record analyses, processed close to 20,000 dictated medical records, completed more than 900 research retrievals and 10,000 admissions, and coded more than 50,000 diagnoses and operations. Medical record administrators processed appointments for more than 1,200 members of the medical staff and 900 research protocols, and responded to more than 6,000 requests for disclosure of confidential information.

The Quality Together process includes chairing cooperative work groups with outpatient speciality clinics and developing in-service training programs to foster continued quality improvements in department services

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